Chapter 2. Forestwide Desired Conditions

Introduction

Desired conditions describe how the resources on the Prescott NF should look and function. In some cases, a desired condition matches the current condition; so the goal is to retain existing characteristics. In other cases, the desired condition is not identical to the current condition, and future management is expected to help Prescott NF trend toward the desired condition. Desired conditions are timeless in that they have no specific date by which they are to be completed. Desired conditions are the focus of the plan and are the basis for developing objectives and other plan components. A future project or activity must be consistent with or help trend toward desired conditions.

Forestwide desired conditions apply across the plan area. Desired conditions are described at multiple, nested scales. Descriptions at various scales are designed to provide detail and guidance for the design of future projects and activities that help achieve the desired conditions over time.

Descriptions at the landscape scale provide the "big picture" desired conditions for terrestrial-based resources across the larger land area (10,000 acres or greater) and may be composed of variable elevations, slopes, landforms, and soils. Descriptions at the mid-scale level represent areas of 1,000 acres or greater and become more specific about characteristics such as species composition and habitat features. Descriptions at the fine scale relate to areas less than 100 acres in size and provide even more detailed information, such as desired vegetation patterns like groups of trees or clumps of vegetation. For instance, in descriptions for the Ponderosa Pine-Gambel Oak PNVT, landscape-scale descriptions identify forests separated by open area. However in the fine scale description, some of the groups of trees between the open areas are described as tight clumps with interlocking tree crowns.

Desired conditions for aquatic resources and watershed integrity are described using watershed scales to help provide their relative importance or niche. Conditions for larger land areas are described under 4th to 5th level hydrologic units (subbasins and watersheds). More detailed descriptions for site-specific conditions are described at the 6th level hydrologic unit (subwatershed). Not all resources (e.g., scenery, heritage, recreation facilities) require a description at more than one scale.

Desired condition descriptions are divided into three sections: physical, biological, and social/economic resources. Physical resources relate to nonliving, ecosystem components such as climate, airsheds, and watersheds. Biological resources relate to living, growing things such as vegetation and aquatic and terrestrial wildlife. Social resources include recreation and transportation opportunities and cultural characteristics of communities such as ranching, scenic beauty, and open space. Economic factors include the impact of Prescott NF activities on the economy of the area.

The desired conditions (plan decisions) below are the numbered statements displayed in boxes. The information outside of these boxes are not plan decisions and are provided for background.

Physical Resources

Physical resources include ecosystem components such as climate, airsheds, and watersheds.

Climate

Background for Climate

The climate of the Southwestern United States is often referred to as dry and hot; however, it is very complex. While low deserts of the Southwest experience heat and drying winds in the early summer, forested mountain areas and plateaus may experience cold and drifting snow during winter. Climate variability is the norm within this region, as temperature and precipitation fluctuate on time scales ranging from seasons to decades. Monsoon thunderstorms in July and August are often accompanied by flash flooding, while from fall to spring, the weather can be warm with clear skies. The Southwest also experiences periods of short- and long-term drought. Precipitation patterns are characterized by two peaks each year; winter precipitation is produced primarily from large frontal systems moving over the region, whereas summer precipitation results largely from thunderstorms within the North American monsoon circulation.

Climate scientists agree that average air temperatures across the globe are rising (Solomon, et al., 2007), and it is expected that continued warming will accentuate or exacerbate interactions among ecosystem components. For example, observed temperature increases across the western U.S. have been linked to: increases in fire season length and severity, increases in total area burned, decreases in air quality, and the creation of new fire regimes (Forest Service, 2009a).

Looking forward, there is general agreement among climate modelers that by the end of the 21st century, the Southwest is likely to experience (Forest Service, 2010):

- Temperature increases of 5–8 degrees Fahrenheit (or about 0.5 °F per decade on average)
- An increase in the number of hot days, with summer heat waves lasting 2 weeks or longer
- Warmer winters and reduced snowpack, and a later monsoonal season
- A 5 percent drop in precipitation in most of Arizona and New Mexico
- An increase in extreme flood events following an overall increase in tropical storms

Changes in water distribution, timing of precipitation, availability, storage, watershed management, and human water use, may present some of the most important challenges of climate change and national forest management in the Southwest. Terrestrial and aquatic ecosystems and all human socioeconomic systems in the Southwest depend on water. The prospect of future droughts becoming more severe because of global warming is also a significant concern.

Climate may influence the distribution and abundance of plant and animal species through changes in resource availability, species productivity, and survivorship. The potential ecological implications of climate change trends in the Southwest indicate:

- More extreme disturbance events, including wildfires, intense rain, flash floods, and wind events (Swetnam et al., 1999).
- Greater vulnerability to invasive species, including insects, plants, fungi, and vertebrates (Joyce et al., 2007).
- Long-term shifts in vegetation patterns (Westerling et al., 2006, and Millar, et al., 2007).
- Cold tolerant vegetation moving upslope, or disappearing in some areas. Migration of some tree species to the more northern portions of their existing range (Clark, 1998).

- Potential decreases in overall forest productivity, due to reduced precipitation (Forest Service, 2005b).
- Shifts in the timing of snowmelt (already observed) in the American West, which, along with increases in summer temperatures, have serious implications for the survival of fish species and may challenge efforts to reintroduce species into their historic range (Joyce, et al., 2007, and Millar, et al., 2007).
- Effects on biodiversity, pressure on wildlife populations, distribution, viability, and migration patterns, because of increasing temperatures, water shortages, and changing ecological conditions.

The following conditions are desired to assist with building ecosystem resilience or adaptive capacity for plant and animal communities to accommodate expected changes imposed by future climate trends for the Southwest.

Desired Conditions for Ecosystem Resilience to Climate Change

Landscape Scale (10,000 acres or greater)

DC-Ecosystem Resilience-1	• Ecosystems retain all of their components, processes, and functions under changing and uncertain future environmental conditions. These resilient ecosystems provide a wide range of ecosystem services for local and regional needs. • Prescott NF landscapes retain capacity to survive natural disturbances and threats to sustainability such as those driven by climate change and an increasing human population. • Ecosystem functions (e.g., nutrient cycling, water infiltration, and carbon sequestration) are sustained as forests, woodlands, grasslands, and desert communities adapt to changing conditions. • Ecosystems are resilient or adaptive to changing natural disturbance regimes (e.g., drought, wind, fire, insects, and pathogens), allowing for shifting of plant communities, structure, and ages across the landscape. • Ecological conditions for habitat quality, distribution, and abundance contribute to self-sustaining populations of terrestrial and aquatic plant and animals. Conditions provide for the life history, distribution, and natural population fluctuations of the species within the capability of the ecosystem. • Contiguous blocks of habitat are interconnected, support a wide array of native species, and allow for genetic and behavioral interactions. • Habitat quality distribution and abundance exist to support recovery and/or stabilization of federally listed and other species.

Airsheds

Background for Airsheds

In 1955, Congress passed the first Federal Clean Air Act (P.L. 84-159) with later amendments in 1967, 1970, 1977, and 1990. Implementation of this Federal law is largely the responsibility of the states which may develop programs that are more restrictive than the Clean Air Act requires but never less. The State of Arizona has a state implementation plan that outlines how the State is implementing the goals of the Clean Air Act, and statutes that regulate burning, including use of wildland fire on Federal and State lands. Two types of air quality impacts are addressed by these laws and regulations: health hazards from pollutants and visibility impacts in Class I Airsheds.

The Clean Air Act establishes National Ambient Air Quality Standards (NAAQS) for six principal pollutants that pose health hazards: carbon monoxide (CO), lead, nitrogen dioxide, particulate matter less than 10 microns in size (PM_{10}), particulate matter less than 2.5 microns in size ($PM_{2.5}$), ozone, and sulfur dioxide. The major pollutant of concern in smoke from wildland fire, both planned and unplanned ignitions, is fine particulate matter (Ottmar, 2001). Particles larger than 10 microns in size tend to settle out of the air; smaller particles remain airborne and can cause respiratory problems. Studies indicate that 90 percent of smoke particles emitted during wildland fires are PM_{10}, and about 90 percent of PM_{10} is $PM_{2.5}$ (Ward and Hardy, 1991).

Human health studies on the effects of particulate matter indicate that $PM_{2.5}$ is largely responsible for health effects (Dockery et al., 1993). The small size of $PM_{2.5}$ is why it has an especially long residence time in the atmosphere and penetrates deeply into the lungs (Ottmar, 2001). The Clean Air Act defines the NAAQS for $PM_{2.5}$ as an annual mean of 15µg/m^3 (micrograms per cubic meter), and a 24-hour average of 35µg/m^3. At this concentration or above, $PM_{2.5}$ is considered to have a detrimental effect on public health. It is important to note that it is not the total amount of emissions from a fire that have effects on human health, but rather it is how concentrated pollutants in ambient air are for a period of time. Atmospheric conditions during a fire have a considerable influence on how particulate matter is distributed through the ambient air and its potential to affect public health. Wind speed and direction, height of atmospheric mixing, atmospheric temperature profile, and atmospheric stability all affect where and how well smoke will disperse.

Regional haze is air pollution that is transported long distances, causing reduced visibility. The same particulate matter that poses human health risks is also largely responsible for impairments to visibility.

In addition to establishing standards for national ambient air quality for airsheds within the U.S., the Clean Air Act established special goals for visibility in many national parks, wilderness areas, and international parks. Through the 1977 amendments to the Clean Air Act, Congress set a national goal for visibility as “the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas, which impairment results from manmade air pollution.” The amendments required EPA to issue regulations to assure “reasonable progress” toward meeting the national goal.

Through the 1999 Regional Haze Rule, the EPA directed states to establish goals for each affected Class I area to: (1) improve visibility on the haziest days and (2) ensure no degradation occurs on the clearest days over the period of each implementation plan.

Two mandatory Class 1 Federal areas occur within or adjacent to the Prescott NF: Sycamore Canyon Wilderness (47,757 acres) and Pine Mountain Wilderness (20,061 acres). Baseline visibility data collected for these two areas (2001 to 2004) indicate increasing visibility and a trend toward the desired goal of 6.68 to 6.96 deciviews by the year 2064.

Fire management activities have the potential to impact airsheds of the Prescott NF. State air pollution agencies recognize that fire of all kinds (i.e., wildfire, prescribed fire) contributes to regional haze, and there is a complex relationship between what is considered a natural source of emissions versus a human-caused source of emissions. For example, the increased use of prescribed fire in some areas may lead to particulate emissions levels lower than those that would be expected from an uncharacteristically severe wildfire. Given that in many instances the purpose of prescribed fires is to restore natural fire patterns across the landscape, state air pollution agencies work with Federal land managers to support the development of enhanced smoke management plans to minimize the effects of emissions on public health and welfare.

For the Prescott NF, air quality resulting from fire is monitored by the Arizona Department of Environmental Quality (ADEQ) Air Quality Division for potential human health impacts using data recorders usually located in local communities including Prescott, Prescott Valley, Cottonwood, and Camp Verde.

To minimize air pollution and smoke impacts, the Prescott NF works with the ADEQ Air Quality Division and follows Arizona's Forest and Rangeland Management Burn Rule (A.R.S. 18-15-1500). The Prescott NF also employs emission reduction techniques to avert smoke impacts to mandatory Class 1 Federal areas.

Under projected warmer and drier climate conditions, airsheds are susceptible to increased levels of pollutants (particulates and aerosols) resulting from longer, more severe fire seasons, increased occurrence of warmer air masses that can suspend higher concentrations of pollutants, and frequent or intense windstorms that can transport pollutants short and long distances.

The following conditions are desired to assist with keeping emissions below the NAAQS, protecting visibility in Class I Areas, and promoting public support for wildland fire management programs.

Desired Conditions for Airsheds

Landscape Scale (10,000 acres or greater)

DC-Airshed-1	• Fire as a natural disturbance process occurs across the landscape. • Smoke and dust levels meet National Ambient Air Quality Standards (NAAQS). • Conflicts between smoke aversion and improvement of ecosystems using fire are infrequent. • Smoke impacts to communities from planned ignitions are minimized through adherence to Arizona Revised Statute, Title 18, Chapter 2, Article 15 or the most current smoke management plan that outlines procedures for requesting, approving, and tracking emissions from planned ignitions. • Citizens are aware of the timing, emission sources, and smoke dispersion patterns of planned ignitions, along with information on the role and benefits of fire as a landscape process. • Forest Service management activities do not contribute to diminished visibility or increased atmospheric deposition of pollutants, especially within the Sycamore Canyon Wilderness and Pine Mountain Wilderness.

Watersheds

Background for Watersheds (Watershed Integrity)

The U.S. Geological Survey has created a hierarchy of hydrologic units that places the Prescott NF within the Lower Colorado River region and within three subregions. Within the Prescott NF, twenty-two 5th level hydrologic units (watersheds) help to make up eight 4th level hydrologic units (subbasins) that overlap the forest to some degree. At a fine scale, the Prescott NF overlaps with portions of one hundred and twenty-seven 6th level hydrologic units (subwatersheds). The 127 subwatersheds vary from about 7,000 to over 48,000 acres in size, although in many cases, only a portion of a subwatershed covers the Prescott NF. See map 2 in appendix A.

While the updated National Hydrologic Database identifies 79.4 miles of perennial or perennial intermittent streams on the Prescott NF, the Verde River is the only major perennial stream with continuous flow from headwaters to mouth.

Water yield varies by subbasin, and those associated with the Bradshaw Mountains receive proportionately more precipitation per acre than areas at lower elevations. Instream flow, critical to maintenance of aquatic ecosystems, has been impacted to varying degrees by diversions and groundwater withdrawals. Water quality has been influenced by past mining activities. For example, about 19.7 miles of Turkey Creek was classified as Category 5 impaired waters due to copper and lead levels. Remediation was completed in 2007.

Riparian corridors on the Prescott NF provide a link between the upland vegetation and soils within a watershed and the aquatic environments found in streams and rivers. Riparian corridors are important natural bio-filters, protecting aquatic environments from excessive sedimentation,

polluted surface runoff, and erosion. They supply shelter and food for many aquatic organisms and shade that is an important part of stream temperature regulation.

Vegetation associated with riparian corridors thrive in proximity to water and are generally dependent upon seasonal flooding and high water tables for germination, growth, and survivorship. Life forms include emergent aquatic plants, forbs and grasses, and woody shrubs and trees that vary with elevation, substrate, stream gradient, and depth to groundwater. In arid regions, including the Prescott NF, the boundary between riparian vegetation and surrounding upland vegetation is often abrupt. This limits the riparian vegetation to long and narrow patterns on the landscape, often referred to as "gallery forest."

The riparian gallery forests on the Prescott NF consist of Fremont cottonwood, various willows, Arizona sycamore, velvet and green ash, Arizona alder, Arizona walnut, and box elder. Herbaceous vegetation (i.e., several species of forbs and grasses) is usually present. On occasion, riparian gallery forests can include various species of oak, pine, or juniper from adjacent uplands.

Mid-scale vegetation mapping compiled in 2007 estimated about 12,400 acres of Riparian Gallery Forest PNVT. The accuracy of this estimate is uncertain due to the inclusion of nonriparian, upland soils and vegetation in the terrestrial ecosystem survey map units. Additional information on the occurrence of riparian vegetation is needed to accurately estimate the spatial extent of the Riparian Gallery Forest PNVT on the Prescott NF.

The Riparian Gallery Forest PNVT exhibits a low departure from desired conditions for vegetation structure and fire regime. However, the spread of nonnative invasive species, soil compaction, or loss of vegetation due to visitor use remain as threats to this ecosystem.

Under projected warmer and drier climate conditions, watersheds are susceptible to changes in the frequency, intensity, timing, and spatial extent of extreme weather events (e.g., droughts, flash flooding, landslides, windstorms, and ice storms). These events, coupled with increased ambient air and soil temperatures, can create corresponding shifts in plant evapotranspiration rates, water infiltration, overland flow, erosion, sediment delivery, and loss of organic ground cover.

The following conditions are desired to assist with the restoration and maintenance of watershed integrity to increase the resilience and adaptive capacity of watersheds and riparian corridors to accommodate expected changes imposed by future climate trends for the Southwest.

Desired Conditions for Watersheds

4th to 5th Level Hydrologic Units (Subbasin to Watershed Scale)

DC-Watershed-1	• The quantity and timing of waterflows in streams, seeps, springs, and wetlands is sustained at a level that retains or enhances essential ecological functions.
	• Water quality is sustained at a level that retains the biological, physical, and chemical integrity of the aquatic systems and benefits survival, growth, reproduction, and migration of native and desired nonnative aquatic and riparian species. Characteristics include:
	  ○ Water quality meets Arizona water quality standards and supports designated beneficial uses and native and desired nonnative aquatic species.
	  ○ Short-term exceedance of water quality standards (i.e., temporary period of declining water quality) due to management activity occurs only in the anticipation of long-term improvement of watershed condition and water quality.
	• Soil and vegetation functions in upland and riparian settings are retained or enhanced.
	• Watersheds support sustainable levels of forage for browsing and grazing animals, timber production, and recreation opportunities with no long-term decline in watershed conditions.

DC-Watershed-2	• Riparian corridors are intact and are trending toward properly functioning condition across the landscape. • Stream channels and associated flood plains occur within their natural flow regimes. • In the flood plains and channels of deciduous forest dominated riparian corridors, coarse woody debris is found in sufficient quantities to provide instream transitory pool-like habitat; shading from intense solar radiation; and organic particles for use as food by fish and aquatic invertebrates. • Access to food, water, cover, nesting areas, and protected pathways for aquatic and upland species is maintained between aquatic and upland components (e.g., logs, ground vegetation).

DC-Watershed-3	• Soil productivity, function, and inherent physical, chemical, and biological processes remain intact or are enhanced. • Elements necessary to sustain soil productivity and function include: ○ Logs and other woody material are distributed across the soil surface to maintain soil productivity within the limitations of individual PNVTs. ○ Soil loss does not exceed soil formation rates. Limited soil compaction does not affect ecological and hydrological functions. ○ Relatively undisturbed biological soil crusts (i.e., soil consisting of cyanbacteria, lichens, mosses, and algae organisms) occur in the interspaces of vascular plants, providing stability and fertility to desert soils. ○ Soil productivity is not inhibited by proliferation of nonnative invasive plant species. ○ Vegetative ground cover is distributed across the soil surface in sufficient proportions to meet or trend toward "natural" conditions listed for each map unit in the terrestrial ecosystem survey. ○ Soils are stable within their natural capability. ○ Soil condition rating is at or trending toward satisfactory[1].
DC-Watershed-4	• The watersheds contributing to the Verde River municipal supply watershed[2] contain vegetation and soil conditions that support desired water quality and quantity for the municipality of Phoenix.

6th Level Hydrologic Unit (Subwatershed Scale)

DC-Watershed-5	• The municipal watershed surrounding Goldwater Lakes provides a supply of clean water for the city of Prescott (from Granite Creek and Groom Creek)[3].

[1] See "Terrestrial Ecosystem Survey of the Prescott National Forest," p. 76 (Robertson et al., 2000).

[2] Municipal supply watersheds are generally those where agreements have been approved between the Forest Service and the municipality.

[3] Based on 1924 agreement which covers portions of Upper Granite Creek-Watson Lake and Groom Creek-Upper Hassayampa 6th level hydrologic units (subwatersheds).

DC-Watershed-6	• Wetlands, seeps, springs, wet meadows, and associated wetlands or riparian systems develop and support stable herbaceous and woody vegetative communities with root masses that stabilize streambanks, flood plains, shoreline, and soil surfaces. • The natural hydrologic and geomorphic processes inherent to these groundwater dependent ecosystems function at a level that allows retention of their unique physical and biological properties.

Biological Resources

Vegetation

Background for All Vegetation

As first mentioned in the introductory chapter, the vegetation found on the Prescott NF is complex and diverse, reflecting a wide range of growing conditions that include hot desert valleys to cool mountaintops. In between, there are a variety of plant communities including grasslands, chaparral, piñon-juniper woodlands, and ponderosa pine forests.

The Forest Service carries out its responsibilities for stewardship under the concept of sustainable multiple-use management. It seeks to meet the diverse needs of people while also protecting the terrestrial vegetation and associated resources of the 10 PNVTs found on the Prescott NF.

The conditions for all vegetation described below are desired to assist with the restoration and maintenance of healthy ecosystems while providing for the sustainable use of those ecosystems. Sustainable uses, including livestock grazing, firewood cutting, and timber harvest contribute to the social, economic, and cultural structure and stability of rural communities. The desired conditions displayed below apply to all PNVTs, and additional PNVT-specific desired conditions are described in the sections that follow.

Desired Conditions for All Vegetation

Landscape Scale (10,000 acres or greater)

DC-Veg-1	• Diverse vegetation structure, species composition, and densities, provide quality habitat for native and desirable nonnative plant and animal species throughout their life cycle and at multiple spatial scales. Landscapes provide for the full range of ecosystem diversity at multiple scales, including habitats for those species associated with old growth conditions. • Native plant communities dominate the landscape, while nonnative invasive species are nonexistent or in low abundance. Establishment of invasive plant species new to the Prescott NF is prevented. Existing invasive plant species are prioritized for eradication, containment, or control.
DC-Veg-2	• A sustainable mix of forest products are offered for sale in response to local and regional needs; these products contribute to the social, economic, and cultural structure and stability of rural communities. • Harvest activities on lands deemed suitable for timber production provide for the diversity of plant and animal communities and other resources to

	meet overall multiple-use objectives. • Forest products are removed from unsuitable lands to benefit forest health, mitigate insect and disease damage, reduce hazardous fuels, improve wildlife habitat, create recreation opportunities, or to perform research or administrative studies.
DC-Veg-3	• Vegetation on lands deemed suitable for livestock grazing provides sustainable amounts of forage for authorized livestock and wildlife species, consistent with multiple-use objectives. • Herbivory aids in sustaining or improving native vegetation cover and composition. • Livestock grazing contributes to aspects of the social, economic, and cultural structure and stability of rural communities.

Mid Scale (1,000 acres or greater)

DC-Veg-4	• Ecological conditions provide suitable habitat for plants identified as Southwestern Region sensitive species.

Fine Scale (less than 100 acres)

DC-Veg-5	• Locally endemic plant communities are intact and functioning. • Unique plant community habitats (e.g., limestone cliffs, margins of seeps and springs, Verde Valley Formation, basalt-lava flows/cinders, calcareous soil/alkaline clay, canyons/cliffs and ledges, granitic soils/igneous rocks, sandstone rocks/soils and riparian forest) are present to maintain well distributed populations of associated native plant species. • Native plants provide nectar, floral diversity, and pollen throughout the seasons that pollinator species are active. Desired habitat conditions promote pollinator success and survival. • Species identified as culturally important are valued and, therefore, enhanced and protected.

Background for PNVTs

Ten PNVTs have been identified for the Prescott NF landscape. The PNVTs found on the Prescott NF are responsive not only to natural and human disturbances but also to the local abiotic features of the landscape (e.g., topography, aspect, slope, soil texture, and water infiltration rates).

Initial identification and classification of PNVTs resulted in 13 categories as reported in the "Prescott National Forest Ecological Sustainability Report" (Forest Service, 2009c). Additional data gathering and assessment since 2009 resulted in a refinement of the PNVT classification for the Prescott NF. Based on updated midscale vegetation inventory, field visits, data review, and biophysical model fitting, the number of PNVTs identified on the Prescott NF was adjusted from

13 to 10. Table 2 lists these 10 PNVTs and their proportional area. Map 1 in appendix A displays the PNVTs for the Prescott NF.

Table 1. Potential natural vegetation types (PNVTs) of the Prescott NF

PNVT Name	Acres	Percent
Semi-Desert Grassland	125,712	10
Great Basin Grassland	38,389	3
Juniper Grassland	137,274	11
Piñon-Juniper Evergreen Shrub	463,296	37
Interior Chaparral	315,445	25
Ponderosa Pine-Evergreen Oak	63,539	5
Ponderosa Pine-Gambel Oak	49,052	4
Piñon-Juniper Woodland	36,263	3
Desert Communities	5,919	< 1
Riparian Gallery Forest	12,439	1
Total	**1,247,328**	**100**

Refinements in the identification and classification of PNVTs included:

- The Mixed-Conifer with Frequent Fire PNVT (6,600 acres) was combined with the Ponderosa Pine Forest PNVT because they are described by the same biophysical setting model (e.g. vegetation structure and disturbance regimes). The resulting PNVT was identified as Ponderosa Pine-Gambel Oak.
- The Mixed-Conifer with Aspen PNVT (80 acres) was determined to be a misidentification and the acres were added to the Ponderosa Pine-Gambel Oak PNVT.
- The Madrean Encinal Woodland PNVT (5,500 acres) map units were grouped with adjoining PNVT units because of concerns about their identification. Most of the indicator species describing this PNVT, with the exception of the Mexican pines, were observed during field visits to the small and scattered map units assigned to this PNVT. These units were found to be interspersed with Interior Chaparral and Ponderosa Pine-Evergreen Oak PNVTs, suggesting the possibility that multiple fire disturbance regimes existing in close proximity to one another could account for the observed variations in vegetation composition and structure. There is uncertainty in how much the observed vegetation structure may reflect recent land use and/or disturbance history versus the presence of a distinct PNVT. Until additional information is available to address the uncertainty associated with identification of the Madrean Encinal Woodland PNVT, it was decided to manage the vegetation of these map units based on their adjoining PNVT.

As shown in table 3, some PNVTs are more similar to desired conditions than others. For most of the PNVTs, however, the vegetation and fire characteristics currently found in a PNVT are not the same as those described in the desired condition. The expectation is that future site-specific projects will produce a trend toward the desired conditions that are described for each of the

PNVTs. Wildlife and plant species are often associated with a PNVT. As conditions trend toward those that are desired, it is intended that habitat for associated species will improve as well.

Table 2. Management concerns for the PNVTs of the Prescott NF

PNVT Name	Acres	Percent of PNF Area	Similarity to Desired Conditions		Management Concerns
			Vegetation Structure	Fire Disturbance	
Semi-Desert Grassland	125,712	10	Low	Low	Lack of desired fire disturbance; tree and shrub encroachment; increases in exposed soil surface and spread of nonnative plants.
Great Basin Grassland	38,389	3	High	Moderate	
Juniper Grassland	137,274	11	Moderate	Moderate	Lack of desired fire disturbance; increased tree and shrub density and canopy cover; lack of perennial grasses and forbs.
Piñon-Juniper Evergreen Shrub	463,296	37	Low	Moderate	
Piñon-Juniper Woodland	36,263	3	High	High	
Interior Chaparral	315,445	25	High	High	Wildfire threat to human life and property.
Ponderosa Pine-Evergreen Oak	63,539	5	Low	Low	Increased tree and shrub density; increased fuel load, increased risk of uncharacteristic high intensity fire, proximity to human life and property.
Ponderosa Pine-Gambel Oak	49,052	4	Low	Low	
Desert Communities	5,919	<1	High	High	Threat of human-caused fire.
Riparian Gallery Forest	12,439	1	High	High	Dewatering; trampling of vegetation.
Grand Total:	1,247,328	100			

Ranges of values presented in desired conditions account for natural variation in the composition, structure, and disturbance patterns within a PNVT. Desired conditions may differ within a PNVT due to spatial variability in soils, elevation, aspect, or varying multiple-use needs. Site-specific areas may be managed for different aspects of desired conditions because of particular resource and species needs. For example, it may be desirable to have different desired conditions within a PNVT, such as a lower density of vegetation in the wildland-urban interface (WUI) than outside of the WUI to achieve the desired fire behavior within the proximity of property and human occupancy. The conditions described for each PNVT in the sections that follow are desired to

restore and maintain vegetation structure and disturbance regimes and to increase ecosystem resilience or adaptive capacity of plant communities to accommodate expected changes imposed by future climate trends for the Southwest.

Background for Piñon-Juniper PNVTs

At roughly 636,800 acres, Piñon-Juniper PNVTs cover a majority of the Prescott NF landscape and represent some of the most extensive PNVTs in the Southwest. These cold adapted evergreen woodlands are characterized by piñon and/or juniper species at elevations ranging from 4,500 to 7,500 feet. The piñon component includes Colorado and single leaf species. The juniper component is a variable mix of alligator, oneseed, Utah, and Rocky Mountain. Annual and perennial grasses, forbs, and shrubs can be found beneath the woodland overstory. Species composition, stand structure, and density vary by location primarily due to disturbance history, precipitation, elevation, temperature, and soil type. On erosive soil types within these PNVTs, shrub, tree, and herbaceous ground cover help to lessen raindrop intensity and soil movement.

Under projected warmer and drier climate conditions, the Piñon-Juniper PNVTs are expected to be susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive species; longer and more severe fire season; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, windstorms, and ice storms). It is possible that there may be some shifts in aerial coverage between the three Piñon-Juniper PNVTs depending on amount and timing of precipitation and site specific conditions such as terrain and soils. In addition, piñon trees may decrease in number due to possible increased insect attack and lack of moisture.

Three distinct Piñon-Juniper PNVTs have been classified on the Prescott NF: Juniper Grassland, Piñon-Juniper Evergreen Shrub, and Piñon-Juniper Woodland. Each one is described in more detail in the following sections.

Background for Juniper Grasslands

The Juniper Grassland PNVT, with a grass and forb dominated understory and scattered overstory trees, generally occurs on flats, basins, gentle sloping foothills, and transitional valleys at generally lower elevations. The soils associated with juniper grasslands are generally deep and productive. Juniper grasslands cover about 137,300 acres of the Prescott NF.

Juniper grasslands are moderately departed from desired conditions. Fire has been excluded from this PNVT for most of the last century, allowing for increases in the age, density, and canopy cover of trees and shrubs and a reduction in fire stimulated regrowth and germination of perennial grasses and forbs.

Desired Conditions for Juniper Grasslands

Landscape Scale (10,000 acres or greater)

DC-Veg-6	• Juniper Grassland PNVTs are generally uneven aged and open in appearance. Trees occur as individuals or in smaller groups and range from young to old. One or more juniper species are always present while piñon species are usually absent. • Tree canopy cover may range from a low of 5 to 10 percent to as high as

	30 percent. A continuous herbaceous understory, including native grasses and forbs, are present, with incidental occurrence of shrubs that support a natural fire regime. • Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, snags, coarse woody debris (downed wood), and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality). • Snags are scattered across the landscape. Coarse woody debris occurrence, including logs, generally averages 1 to 2 tons per acre. • Fires occur every 1 to 35 years with low severity favoring regrowth and germination of native grasses and forbs.

Background for Piñon-Juniper Evergreen Shrub

The Piñon-Juniper Evergreen Shrub PNVT, with an understory dominated by a mix of shrub species, generally occurs on elevated and lowland plains, hills, and lower mountain slopes. The soils associated with this PNVT are variable and include those derived from granite, limestone, basalt, sandstone, and alluvium. Covering more than 463,000 acres, this is the most common Piñon-Juniper PNVT on the Prescott NF.

The Piñon-Juniper Evergreen Shrub PNVT is moderately departed from desired conditions. For example, within-group tree and shrub density is higher than expected, and shrub canopy cover lacks variability. Current fire frequency and severity show some similarity to desired conditions.

Desired Conditions for Piñon-Juniper Evergreen Shrub

Landscape Scale (10,000 acres or greater)

DC-Veg-7	• Piñon-Juniper Evergreen Shrub PNVTs are a mix of trees and shrubs and herbaceous vegetation occurring on the landscape as discrete groups. Trees occur as individuals or in smaller groups ranging from young to old. One or more juniper species are always present while piñon trees are occasionally absent. Typically, there is a mosaic of groups of trees that are even aged in structure with all ages represented across the landscape. • The understory is dominated by low to moderate density shrubs. Shrub canopy cover is variable (10 to 65 percent). The shrub component consists of one or a mix of evergreen shrubs including oak, manzanita, mountain mahogany, cliffrose, and other shrub species, which are well distributed. Native perennial grasses and annual and perennial forbs are present in the interspaces. • Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, snags, coarse woody debris (downed wood), and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and

	mortality). • Snags and old trees with dead limbs/tops are scattered across the landscape. Coarse woody debris is present. • Fires are typically of mixed severity while some evergreen shrub types exhibit occasional high severity fires. Regardless of the level of severity, fires occur with an average frequency of 35 to 100 years.

Mid-Scale (1,000 acres or greater)

DC-Veg-8	To reduce wildfire behavior and hazards to life and property: • Vegetation conditions within the wildland-urban interface (WUI) may be composed of younger and more widely-spaced shrub patches and tree groups than for the same PNVTs located outside of WUI areas. • The frequency of disturbance (e.g., prescribed fire, vegetation treatments) within the WUI may be more often than for the same PNVTs located outside of WUI areas.

Background for Piñon-Juniper Woodlands

Covering about 36,000 acres of the Prescott NF, the Piñon-Juniper Woodland PNVT has a persistent tree overstory and a discontinuous understory of grasses and/or shrubs. It generally occurs on flats, ridgetops, rugged uplands, and steep slopes at various elevations, and on soils that are shallow and rocky.

Current vegetative conditions and fire regimes within the piñon-juniper woodlands are similar to desired conditions. Fire in this PNVT is less frequent and more variable than in the Juniper Grassland and Piñon-Juniper Evergreen Shrub PNVTs due to differences in vegetative ground cover and fine fuels.

Desired Conditions for Piñon-Juniper Woodlands

Landscape Scale (10,000 acres or greater)

DC-Veg-9	• Piñon-Juniper Woodland PNVTs are a mosaic of even-aged patches of juniper and variable amounts of piñon that form multiaged persistent woodlands. Piñon trees are occasionally absent, but one or more juniper species is always present. Very old trees (> 300 years old) are present. • Tree density is variable and mid-to-old age groups of trees have greater than 40 percent canopy cover, shrubs are sparse, and herbaceous cover is low and discontinuous. • Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, snags, coarse woody debris (downed wood), and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and

	mortality). • Snags and older trees with dead limbs and/or tops are scattered across the landscape. Coarse woody debris generally averages 2 to 5 tons per acre. • Fire in this PNVT is less frequent than in the juniper grassland and evergreen shrub types and variable due to differences in ground cover. The fires that do occur have mixed to high severity effects and return intervals that range from 35 to 200+ years.

Mid-Scale (1,000 acres or greater)

DC-Veg-10	To reduce wildfire behavior and hazards to life and property: • Vegetation conditions within the wildland-urban interface (WUI) may be composed of younger and more widely spaced shrub patches and tree groups than for the same PNVTs located outside of WUI areas. • The frequency of disturbance (e.g., prescribed fire, vegetation treatments) within the WUI may be more often than for the same PNVTs located outside of WUI areas.

Background for Interior Chaparral

The Interior Chaparral PNVT extends over 315,600 acres, and represents the second largest PNVT on the Prescott NF. Interior chaparral occurs at mid-elevations (3,400 to 6,600 feet) on foothills and lower mountain slopes. It is bordered by ponderosa pine or piñon-juniper woodlands at the upper elevations, and semi-desert grasslands at the lower elevations. Interior chaparral has a uniform dense structure dominated by shrubs with thick, stiff, waxy evergreen leaves. Mixed shrub associations include: shrub live oak, manzanita, desert ceanothus, mountain mahogany, silktassles, Stansbury cliffrose, evergreen oaks, sumacs, and various cacti. Grasses are a minor component in chaparral and may include grama, threeawn, and muttongrass species.

The plant composition, structure, and fire regime found within the Interior Chaparral PNVT are similar to desired conditions; however, some nonnative invasive species, such as yellow star thistle and Dalmatian toadflax, are known to infest small portions of this PNVT.

Under projected warmer and drier climate conditions, the Interior Chaparral PNVT is susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, windstorms, and ice storms).

Desired Conditions for Interior Chaparral

Landscape Scale (10,000 acres or greater)

DC-Veg-11	• During young stages of development, Interior Chaparral PNVTs contain a grass and forb component in the understory. The mid-to-late development stages (i.e., older than 10 to 15 years) are dense thickets with considerable shrub litter. Standing dead material may accumulate in areas that have not burned for several decades. Ground cover consists primarily of shrub litter (e.g., small stems, leaves). Greater than 70 percent of chaparral is closed canopy with some openings of grasses and forbs. • Chaparral is in a constant state of transition from young to older stages and back again, with fire being the major disturbance factor. High severity fires occur with a frequency of once every 35 to 100 years.

Mid-Scale (1,000 acres or greater)

DC-Veg-12	To reduce wildfire behavior and hazards to life and property: • Vegetation conditions within the wildland-urban interface (WUI) may be composed of younger and more widely spaced shrub patches and tree groups than for the same PNVTs located outside of WUI areas. • The frequency of disturbance (e.g., prescribed fire, vegetation treatments) within the WUI may be more often than for the same PNVTs located outside of WUI areas.

Background for Ponderosa Pine-Evergreen Oak Forest

The Ponderosa Pine-Evergreen Oak PNVT covers more than 63,500 acres of the Prescott NF at elevations ranging from approximately 6,000 to 7,500 feet. These forests are dominated by ponderosa pine and can be distinguished from the Ponderosa Pine-Gambel Oak PNVT by one or more well represented evergreen oak species (e.g., Emory oak and Arizona white oak), juniper species, piñon pine species, and Arizona cypress in some locations. These forests have an understory of primarily evergreen shrubs including manzanita, turbinella oak, sumac species, and mountain mahogany species.

This PNVT is currently severely departed from desired conditions. It has too many young and mid-aged trees and uncharacteristically high tree and shrub density. There are not enough old trees. The desired frequency and intensity of fires is lacking. Historically, fire burned relatively frequently (every 6 to 12 years) and at low intensities maintaining an open pine forest with a mix of young evergreen oaks and shrubs underneath. Approximately two thirds of this PNVT occurs within the wildland-urban interface.

Under projected warmer and drier climate conditions, the Ponderosa Pine-Evergreen Oak PNVT is susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks, colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, windstorms, and ice storms). High risk occurrences could include

uncharacteristically intense wildfire, increased rate of insect or disease attack due to warming temperatures, and increasing challenges to regeneration of ponderosa pine, especially on warmer, drier areas such as south-facing slopes.

Desired Conditions for Ponderosa Pine-Evergreen Oak Forest

Landscape Scale (10,000 acres or greater)

DC-Veg-13	• At the landscape scale, Ponderosa Pine-Evergreen Oak PNVTs are forests having a mosaic of structural stages ranging from young to old trees. Forest structure is variable but generally uneven aged and open in appearance. The forest arrangement consists of small clumps and groups of trees interspersed within variably sized openings of moderate to high density shrubs and limited grass cover. The size, shape, and number of trees per group and the number of groups per area vary across the landscape. Tree density may be greater in some locations, such as north-facing slopes and canyon bottoms. • Vegetation composition resembles historic situations including ponderosa pine overstory. Evergreen oaks are well represented and juniper, piñon pine, and Arizona cypress can be found in the lower tree canopy. Understory species consist of evergreen shrubs (e.g., manzanita, turbinella oak, sumac species, mountain mahogany species) and grass as scattered ground cover. • Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, snags, coarse woody debris (downed wood), and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality). The forest contains various stages of development (e.g., temporary openings or groups of very young trees) to provide future old growth within the landscape. • The ponderosa pine-evergreen oak forest is composed predominantly of vigorous trees and shrubs, but declining, top killed, lightning scarred, and fire scarred trees provide snags and coarse woody debris (greater than 3 inch diameter). A variety of snag species and coarse woody debris are well distributed throughout the landscape. Snags are typically 18 inches or greater diameter at breast height (d.b.h.) and average 1 to 2 per acre. Logs (greater than 12 inch diameter at mid-point and greater than 8 feet long) average 3 per acre within the forested area of the landscape. Coarse woody debris, including logs, ranges from 3 to 10 tons per acre. • Where it naturally occurs, Emory oak and Arizona white oak are present with all age classes represented. Old trees occur as dominant individuals or small groups in openings. • Limited grasses, forbs, and a moderate density of shrubs and needle cast (fine fuels) support the natural fire regime.

	• Fires of low severity and occasionally mixed severity, occurring every 6 to 12 years, are characteristic of this PNVT including throughout the range of northern goshawks.

Mid Scale (1,000 acres or greater)

DC-Veg-14	• Ponderosa pine-evergreen oak forest is characterized by variation in the size and number of tree groups depending on elevation, soil type, aspect, and site productivity. The more biologically productive sites contain more trees per group and more groups per area. Desired tree density within forested areas generally ranges from 40 to 80 square feet basal area per acre. In occasional marginal sites, basal area could be as low as 20 square feet per acre. Openings surrounding tree groups are variably shaped and comprised of shrub, grass, and forb mixture. Openings typically range from 10 percent in more productive sites to 70 percent in the less productive sites. Occasionally patches of even-aged forest structure are present. • Fires burn primarily on the forest floor, with occasional consumption of the overstory as crown fire. Crown fires occur in small patches. • Basal area per mature tree group in northern goshawk post-fledgling family areas (PFAs) is 10 to 20 percent higher than northern goshawk foraging areas and the general forest. Northern goshawk nest areas have multiaged forest structure, dominated by large trees with relatively denser canopies than other areas in this PNVT.
DC-Veg-15	To reduce wildfire behavior and hazards to life and property: • Vegetation conditions within the wildland-urban interface (WUI) may be composed of younger and more widely spaced shrub patches and tree groups than for the same PNVTs located outside of WUI areas. • The frequency of disturbance (e.g., prescribed fire, vegetation treatments) within the WUI may be more often than for the same PNVTs located outside of WUI areas.

Fine Scale (less than 100 acres)

DC-Veg-16	• Trees typically occur in irregularly shaped groups and are variably spaced with some tight clumps. Openings surrounding tree groups are composed of shrubs and limited grass cover. Some openings contain a high density of shrubs and/or individual trees. • Trees within groups are of similar or variable ages and may contain species other than ponderosa pine. Tree groups are typically less than 1 acre, and at the mature and old stages, consist of approximately 2 to 40 trees.

Background for Ponderosa Pine-Gambel Oak Forest

The Ponderosa Pine-Gambel Oak PNVT covers approximately 49,000 acres. This PNVT generally occurs at elevations ranging from 5,500 to 9,000 feet on hills, mountain slopes, and some elevated plains. These forests are dominated by ponderosa pine and Gambel oak and commonly include other tree species such as New Mexico locust, juniper, and piñon. Species such as aspen, Douglas-fir, and white fir may be present, especially in relatively moist or shady areas. There is typically an understory of grasses and forbs with occasional shrubs.

This PNVT is severely departed from desired conditions. It has too many young and mid-aged trees and not enough old trees. The desired fire frequency and intensity is lacking. Historically, fire burned relatively frequently (every 1 to 15 years) and at low intensities that kept the forest open with abundant herbaceous cover.

Under projected warmer and drier climate conditions, the Ponderosa Pine-Gambel Oak PNVT is susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, windstorms, and ice storms). Similar to the Ponderosa Pine-Evergreen Oak PNVT, high risk occurrences could include uncharacteristically intense wildfire due to less moisture, increased rate of insect or disease attack due to warming temperatures, and increasing challenges to regeneration of ponderosa pine following disturbance, especially on warmer, drier areas such as south-facing slopes.

Desired Conditions for Ponderosa Pine-Gambel Oak Forest

Landscape Scale (10,000 acres or greater)

DC-Veg-17	• At the landscape scale, Ponderosa Pine-Gambel Oak PNVTs are forests having a mosaic of structural stages ranging from young to old trees. Forest structure is variable but generally uneven aged and open in appearance. • The forest arrangement consists of small clumps and groups of trees interspersed within variably sized openings of grasses, forbs, and shrubs. The size, shape, and number of trees per group and the number of groups per area vary across the landscape. Tree density may be greater in some locations, such as north-facing slopes and steep sided valleys at higher elevation. • Vegetation composition resembles historic situations including ponderosa pine overstory with Gambel oak occupying the lower tree canopy. Aspen or Gambel oak patches occur. There is typically an understory of grasses and forbs with occasional shrubs. Where it naturally occurs, Gambel oak is present with all age classes represented. It is reproducing to maintain or expand its presence on suitable sites across the landscape. • Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, snags, coarse woody debris (downed wood), and structural diversity. The location of old growth

	shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality). The forest contains various stages of development (e.g., temporary openings or groups of very young trees) to provide future old growth within the landscape. • The ponderosa pine-Gambel oak forest is composed predominantly of vigorous trees, but declining top killed, lightning scarred, and fire scarred trees provide snags and coarse woody debris (greater than 3 inches in diameter). A variety of snag species and coarse woody debris are well distributed throughout the landscape. Snags are typically 18 inches or greater d.b.h. and average 1 to 2 per acre. Logs (greater than 12 inches in diameter at mid-point and greater than 8 feet long) average 3 per acre within the forested area of the landscape. Coarse woody debris, including logs, ranges from 3 to 10 tons per acre. • Grasses, forbs, shrubs, needle cast (fine fuels), and small trees support the natural fire regime. The greater proportion of ground cover is composed of grasses and forbs as opposed to needle cast. • Frequent, low severity fires, occurring every 1 to 15 years, are characteristic of this forest including throughout the range of northern goshawks and Mexican spotted owls.

Mid Scale (1,000 acres or greater)

DC-Veg-18	• Ponderosa pine-Gambel oak forest is characterized by variation in the size and number of tree groups depending on elevation, soil type, aspect, and site productivity. The more productive sites contain more trees per group and more groups per area. Tree density within forested areas generally ranges from 20 to 80 square feet basal area per acre. The openings surrounding tree groups, containing grass, forb, and shrub vegetation, are variably shaped and typically range from 10 to 70 percent of the mid-scale area. Patches of even-aged forest structure are present. • Fires burn primarily on the forest floor and do not spread between tree groups as crown fire. • Basal area per mature tree group in northern goshawk post-fledgling family areas (PFAs) is 10 to 20 percent higher than northern goshawk foraging areas and the general forest. Northern goshawk nest areas have multiaged forest structure, dominated by large trees with relatively denser canopies than other areas in this PNVT.
DC-Veg-19	To reduce wildfire behavior and hazards to life and property: • Vegetation conditions within the wildland-urban interface (WUI) may be composed of younger and more widely spaced shrub patches and tree groups than for the same PNVTs located outside of WUI areas. • The frequency of disturbance (e.g., prescribed fire, vegetation treatments) within the WUI may be more often than for the same PNVTs located outside of WUI areas.

Fine Scale (less than 100 acres)

DC-Veg-20	• Trees typically occur in irregularly shaped groups and are variably spaced with some tight clumps. Crowns in the mid- to old-aged stages are interlocking or nearly interlocking. Openings surrounding tree groups are composed of a grass, forb, and shrub mix. Some openings contain individual trees. Trees within groups are of similar or variable ages and may contain species other than ponderosa pine. Tree groups are typically less than 1 acre, and at the mature and old stages consist of approximately 2 to 45 trees.

Background for Grasslands

There are two grassland PNVTs classified for the Prescott NF: Semi-Desert and Great Basin. Grassland PNVTs are characterized as having less than 10 percent tree cover.

The Semi-Desert Grassland PNVT encompasses roughly 126,000 acres at elevations ranging from 3,000 to 4,500 feet. These grasslands are bounded by the Desert Communities PNVT at the lowest elevations and the Piñon-Juniper Woodlands or Interior Chaparral PNVTs at higher elevations. Species composition and dominance varies based on soils and topography. The more common grass species include black grama, blue grama, hairy grama, tobosa, and giant sacaton. Various shrubs species also inhabit these grasslands including: creosote bush, catclaw acacia, mimosa, burroweed, broom snakeweed, and mesquite.

The Great Basin Grassland PNVT encompasses almost 38,000 acres and intermingles with Piñon-Juniper PNVTs adjacent to the Chino Valley. It is higher in elevation (approximately 4,700 to 7,600 feet) and climatically cooler and moister than the Semi-Desert Grassland PNVT. Vegetation consists mostly of grasses and forbs with interspersed shrubs. Grass species may include, but are not limited to, Indian ricegrass, threeawns, blue grama, needle grass, bottlebrush squirreltail, James' galleta, dropseed, and tobosa grass. Shrub and half-shrub species may include, but are not limited to, saltbush, snakeweed, winterfat, buckwheat, and juniper.

Healthy grasslands are important habitat for a variety of wildlife species and are essential to maintaining pronghorn antelope populations. The grasslands PNVTs of the Prescott NF have undergone dramatic changes over the last 130 years. Changes include encroachment by trees and shrubs, loss of perennial grass cover, loss of cool season plant species, increase in exposed soil surface, and the spread of nonnative annual grasses. Fire plays a key role in the maintenance of grasslands. Fire historically occurred every 10 to 30 years in the Great Basin Grassland PNVT and 2 to 10 years in the Semi-Desert Grassland PNVT.

The Great Basin Grassland PNVT exhibits a low departure from desired conditions in structure and composition; however, without periodic disturbance (such as fire), conditions are expected to trend away from desired conditions. In contrast, the Semi-Desert Grassland PNVT shows severe departure from desired conditions in both structure and fire regime.

Under projected warmer and drier climate conditions, the Grassland PNVTs are susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash

flooding, landslides, and ice storms). Grasses make use of moisture in the upper soil layers. Intense precipitation events may lead to increased runoff, but decreased effective water infiltration. This could decrease vigor of native plants and lead to increased colonization of nonnative invasive plant species.

Desired Conditions for Grasslands

Landscape Scale (10,000 acres or greater)

DC-Veg-21	• Within Semi-Desert Grassland and Great Basin Grassland PNVTs, perennial herbaceous species dominate and include native grasses, grass-like plants (sedges and rushes), and forbs and, where appropriate, a diversity of shrubs. Woody (tree and shrub) canopy cover is less than 10 percent. Grass communities consist of a diverse mix of cool and warm season species. • Composition, structure, and cover provide habitat for native animals associated with grasslands, especially pronghorn antelope, ferruginous and Swainson's hawks, western burrowing owls, and western grasshopper sparrows. • On average, fine fuels provide for and maintain the desired fire regime. The desired fire return interval for the Semi-Desert Grassland PNVT is approximately every 10 to 15 years. The desired fire return interval for the Great Basin Grassland PNVT is approximately every 10 to 30 years.

Background for Desert Communities

The Desert Communities PNVT covers approximately 5,900 acres of the lowest elevations of the Prescott NF. They most often have the appearance of a scrubland or low woodland of leguminous trees with intervening spaces held by one to several open layers of shrubs, cacti, and perennial succulents. This PNVT is found on slopes, broken ground, and multidissected sloping plains.

Historically, weather events such as drought, frost, and wind thinned the dominant overstory plants. Vegetation within the Desert Communities PNVT is not thought to have supported fuel loads to sustain large fires prior to European habitation of the region. Fires would have been associated with dry lightning coincident with monsoonal storms during years when previous winter precipitation was sufficient to create a thick fine fuel bed of annual plants. Replacement fires were very rare or absent (averaging about once in 100 to 1,000 years). If they occurred, they did so during conditions of extreme fire behavior after consecutive years of above average winter precipitation. These rare fires had tremendous influence on community structure because the dominant overstory plants are extremely susceptible to fires, even those of low intensity.

The vegetation composition and structure within the Desert Communities PNVT are similar to desired conditions. However, nonnative grasses have been invading over the last few decades, providing fuel for uncharacteristic and more frequent fire. Currently, the natural disturbance regime has been altered by the periodic occurrence of human-caused wildfires.

Under projected warmer and drier climate conditions, the Desert Communities PNVT is susceptible to increases in insect attacks; colonization of invasive species; longer and more severe

fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, and windstorms).

In the Desert Communities PNVT, warming and drying could enhance the invasion of nonnative plant species that are adapted to fire. These species grow quickly in the spring and then dry and cure so that wildfire risks increase. The natural vegetation within this PNVT is not adapted to fire and can require long time periods to reproduce. Fire can greatly change the plant composition and, thus, change the desert plant communities so that birds and other wildlife species may be affected.

Desired Conditions for Desert Communities

Landscape Scale (10,000 acres or greater)

DC-Veg-22	• The Desert Communities PNVT is comprised of cacti, succulents, trees, and shrubs with variable vegetation cover ranging from 1 to 20 percent of the dominate overstory plants. Grass cover is inherently low. Nonnative grass species coverage is controlled. • Dominant plants include giant saguaro, palo verde trees, cholla and prickly pear cacti, ocotillo, velvet mesquite, catclaw acacia, and jojoba. • Natural disturbances are infrequent from drought, frost, and wind. Fire is very rare or absent. • Damage to vegetation composition, density, and structure from human-caused fires is infrequent and limited in duration and extent. • Saguaros, mesquite trees, and other vegetation large enough to sustain cavity nesting birds are present across the landscape.

Background for Riparian Gallery Forests

The Riparian Gallery Forest PNVT covers approximately 12,400 acres, representing about 1 percent of the forest. The extent of the Riparian Gallery Forest PNVT is based on mid-scale vegetation mapping compiled in 2007. The accuracy of this estimate is uncertain due to the inclusion of nonriparian, upland soils and vegetation in the terrestrial ecosystem survey map units.

Riparian Gallery Forest PNVT occurs along perennial or intermittent streams ranging in elevation from 2,000 to 8,000 feet. It contains two major vegetation communities; cottonwood-willow and mixed broadleaf deciduous forests. The dominant woody vegetation varies in both composition and structure according to elevation, substrate, stream gradient, and depth to groundwater. Common species include Fremont cottonwood, narrowleaf, Gooding and Bebb willow, Arizona sycamore, velvet and green ash, Arizona alder, Arizona walnut, and box elder. On occasion it can also include various species of oak, pine, or juniper from adjacent uplands. Herbaceous plants include several forbs, sedges, rushes, and grasses.

The Riparian Gallery Forest PNVT exhibits a low departure from desired conditions for vegetation structure and fire regime. However, the spread of nonnative invasive species and soil compaction or loss of vegetation due to visitor use remain as threats to this ecosystem.

Under projected warmer and drier climate conditions, the Riparian Gallery Forest PNVT is susceptible to decreases in plant productivity from water limitations and increased heat; increases in insect attacks; colonization of invasive species; longer and more severe fire seasons; and altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., droughts, flash flooding, landslides, windstorms, and ice storms). These events, coupled with increased ambient air and soil temperatures, can create corresponding shifts in plant evapo-transpiration rates, water infiltration, overland flow, erosion, sediment delivery, and loss of organic ground cover.

Desired Conditions for Riparian Gallery Forests

Mid-Scale (1,000 acres or greater)

DC-Veg-23	• Natural ecological processes (e.g., periodic flooding and scouring) promote a diverse plant structure necessary for the recruitment of riparian-dependant species. • Compared to surrounding uplands, riparian corridors have characteristics (e.g., surface water, saturated soils) that reduce the frequency and severity of fire. Infrequent fires of high severity and occasionally mixed severity, occurring approximately every 600 years, are characteristic of this PNVT. • Vegetation consists of native species that support a range of invertebrate and vertebrate species and are free of invasive plant and animal species. • Herbaceous vegetation and other ground covers are present to filter sediments, stabilize streambanks, mitigate effects of flooding, and contribute to infiltration and groundwater recharge. • Woody riparian species such as cottonwood, willow, ash, and alder are reproducing with all age classes present. A diverse vegetation structure, including mature trees, snags, logs, and coarse woody debris, is present to provide habitat for riparian-dependant species.

Terrestrial Wildlife

Background for Terrestrial Wildlife

Species diversity and distribution are important to retaining natural components of ecosystems. The Prescott NF evaluated 222 bird and 98 mammal species (Forest Service, 2009c) to determine terrestrial species diversity and viability across the forest. Species were not considered further if: (1) management activities did not affect the species; (2) there was so little information known that management direction could not be identified; or (3) species appeared to be secure and well distributed. Thirty-three birds, 11 mammals, and 1 reptile[4] were considered further. The majority of those species' habitat requirements could be associated with one or more PNVTs. Therefore, desired conditions for PNVTs and for ecosystem resilience or adaptation provide for conditions that most species require. For a smaller group of species, additional guidance was developed, including desired conditions, objectives (chapter 3), standards and guidelines (chapter 4), or all three.

[4] Morafka's desert tortoise (*Gopherus morafki*).

The following conditions are desired to assist with the protection of terrestrial wildlife species and their associated habitats and to increase the resilience and adaptive capacity of these species and habitats to accommodate expected changes imposed by future climate trends for the Southwest.

Desired Conditions for Terrestrial Wildlife[5]

Landscape Scale (10,000 acres or greater)

DC-Wildlife-1	• Known locations of Southwestern Region sensitive species are protected. Habitats that support populations of these species are enhanced to facilitate their protection. • Fire plays a role in maintaining wildlife habitat for species associated with fire-adapted systems. • Wildlife in habitats associated with animal movement corridors are free from human harassment[6]. • Avian and mammal mortality and habitat alteration associated with existing and proposed power lines, corridors, energy development (i.e., wind and solar), and cell towers is minimized through implementation of design features and guidelines. • Terrestrial habitats are free of negative impacts from nonnative or feral species.
DC-Wildlife-2	• Vegetation conditions for federally listed species are consistent with existing recovery plans. • Ecological conditions provide habitat for associated federally listed species. Habitat conditions generally contribute to survival and recovery, and contribute to the delisting of species under the Endangered Species Act (ESA) of 1973 (P.L. 93-205). • Improved habitats for candidate and proposed species help preclude species listings as threatened or endangered under ESA.

Aquatic Wildlife

Background for Aquatic Wildlife

Aquatic wildlife includes not only fish but also reptiles, amphibians, and invertebrate species (e.g., insects, springsnails). Aquatic habitats occur in perennial and perennial intermittent rivers[7] and streams, as well as groundwater dependent systems, such as springs and seeps. A similar process as that described above for terrestrial species was applied to determine species that may

[5] These wildlife desired conditions are in addition to those related to vegetation and found in the "Vegetation" "Desired Conditions" section.

[6] Human activities which could potentially harrass wildlife include, but are not limited to, shooting, camping in developed sites, and OHV recreation.

[7] Streams other than the Verde River on the Prescott NF are predominantly discontinuous, meaning that there are perennial flowing segments separated by reaches that have intermittent flow; or that they cease to be perennial prior to confluence with a larger stream, with flow sinking into the underlying porous soil or fault/fracture conditions.

need guidance in the forest plan. Of 183 aquatic species considered, 2 reptiles, 2 amphibians, 12 fish, and 3 invertebrates are thought to exist on the Prescott NF and required development of plan guidance (Forest Service, 2009c). Aquatic wildlife are addressed here and also as part of "Watersheds" desired conditions, objectives (chapter 3), and standards and guidelines (chapter 4).

Under projected warmer and drier climate conditions, aquatic species are susceptible to increased water temperatures, altered seasonal discharge events, increases in drought severity during summer flows, and increased predation pressure. Concerns include decreases in waterflow and, possibly, a shorter period of sustained flows in the spring due to reduced winter snowpack. Sustained flows and desired temperatures in the spring are needed for successful spawning. Another concern is the potential for fragmentation of habitat with resulting increases in competition and predation in pools, due to little or no waterflow in some stream segments.

The following conditions are desired to assist with the protection of aquatic wildlife species and their associated habitats, and to increase the resilience and adaptive capacity of these species and habitats to accommodate expected changes imposed by future climate trends for the Southwest.

Desired Conditions for Aquatic Wildlife

4th Level Hydrologic Unit (Subbasin Scale)

DC-Aquatic-1	• Streams, springs, and wetlands with the potential to support native fish and/or other aquatic species provide habitats that are resilient or adaptive to natural disturbances and projected warmer and drier climatic conditions. • Quantity and timing of waterflows[8] are maintained in streams, seeps, springs, and wetlands to retain or enhance aquatic habitat and ecological functions. • Water quality is sustained at a level that retains the biological, physical, and chemical integrity of the aquatic systems and benefits survival, growth, reproduction, and migration of native aquatic species. • Riparian vegetative communities within these aquatic habitats are intact and trending toward properly functioning condition. • Aquatic habitats are free of negative impacts from nonnative plant and animal species.

[8] Generally, sustained spring waterflows as well as cooler water temperatures are needed by fish for spawning. Therefore, the time of year of flows, as well as the stream depth, are important.

5th Level Hydrologic Unit (Watershed Scale)

DC-Aquatic-2	• Desired nonnative fish[9] species are present only where recreational fishing opportunities are emphasized.

Social and Economic Resources

The recreation program produces the largest indirect influence on the local economy by providing features that draw tourists to the area. Tourists then spend money on food and lodging. The livestock grazing program has the greatest direct impact on the economy within Yavapai County. Changes in the program could directly affect jobs or income. Some desired conditions that relate to social or economic factors are also referenced in desired conditions for vegetation. In particular, see DC-Veg-2 and DC-Veg-3.

Recreation, Transportation, and Facilities

Background for Recreation, Transportation, and Facilities

In 2006, the Prescott NF developed a niche statement to identify and emphasize the unique types of recreation opportunities provided by the forest:

> ***The Prescott National Forest – Where the Desert Meets the Cool Pines***
>
> "The Prescott's unique mix of climate zones provide for 'cool zone' heat relief from the Arizona sun in the summer and a 'warm zone' in the winter. The forest offers short duration, day use recreation on trails supported by development that provides staging areas and resource protection. Adventure activities are strategically managed to be compatible with one another to preserve the natural setting and the ecosystems of the forest."

The mild climate of the Prescott NF encourages year-round recreation activity. Trail and day use are primary activity types and include: off-highway vehicle riding, horseback riding, hiking, biking, hunting, fishing, and wildlife viewing. Most visitors to the forest live in Yavapai County. Maricopa County residents comprise the next largest group, with portions of the Prescott NF located less than 90 miles from the Phoenix metropolitan area.

The developed sites on the Prescott NF encompass campgrounds, picnic areas, lake access, equestrian areas, rental cabins, and a recreational shooting range. Those with the highest use include Thumb Butte, Lynx Lake, Mingus Mountain, Horsethief Basin, and Granite Basin Recreation Areas. The area surrounding the city of Prescott, the Prescott Basin, has the highest concentration of recreation activity on the Prescott NF and limits dispersed camping to designated sites.

The Prescott NF also contains over 800 miles of both motorized and nonmotorized trails, 8 designated wilderness areas containing over 100,000 acres, and a portion of the Verde Wild and

[9] Nonnative fish species include bass, sunfish, certain trout species, and other fish that anglers enjoy. Many of these fish are stocked in streams or lakes to provide a fishing experience, but they can act as predators to native fish species. The desired condition indicates that places where recreational fishing opportunities are emphasized should be separated from places where native fish habitat is emphasized.

Scenic River. The forest's recreation niche statement identifies trail and day use as primary uses by visitors; 50 percent of these visitors are from within a 20-mile radius. The Prescott NF had 1,230,500 annual visitors in 2007. Top recreation activities listed as a primary activity by visitors on the forest include hiking and walking, viewing natural features, and driving for pleasure (Forest Service, 2008).

Under projected warmer and drier climate conditions, recreation and transportation facilities are susceptible to increased use for relief from increased temperatures in urban areas and to damage from altered frequency, intensity, timing, and spatial extent of disturbance events (e.g., fire, droughts, flash flooding, landslides, and windstorms).

Desired Conditions for Recreation, Transportation, and Facilities

DC-Rec-1	• Recreation on the Prescott NF provides opportunities for current and future demographics, as well as those of all abilities, to discover and enjoy the landscape. • The number, location, and types of recreation facilities respond to changes in demand. They concentrate use at key locations so that visitors enjoy the cultural and biophysical resources while protecting those resources. Forest users learn from their experience on the Prescott NF and have a better understanding of the ecology of the area. • Conflicts between different recreation uses are infrequent. • Visitors experience friendly and positive interactions with Forest Service employees and volunteers. • Developed recreation sites are safe, clean, and sanitary. • Recreation facilities and constructed features (trails, trailheads, etc.) minimize resource impacts, especially those related to watershed integrity. • Trails, facilities, or areas eligible for State or National special designation retain their qualifying characteristics. • Vegetation within developed recreation areas is diverse, healthy, and free from hazards to public safety. Vegetation contributes to scenic, healthy, natural, and sustainable recreation areas and enriches the visitors' experience. • Designated dispersed recreation occurs in areas that can accommodate concentrations of use, while impact to natural and cultural resources of the setting is minimal or absent. • Signage is accurate, effective, and in appropriate numbers for the recreation setting. Information provided matches that found in brochures and other printed material. • Visitors are aware of, and comply with, forest regulations. • Permitted recreation uses (e.g., recreation special events or guided activities) are consistent with recreation settings, protection of natural and cultural resources, and community goals.

DC-Rec-2 Trails	• Trail opportunities are available in a variety of settings that provide differing levels of challenge and seclusion. • Trail routes include both point-to-point trails that connect communities and interconnected loops of varying lengths. • On designated maintenance level 2 NFS roads, motorized vehicles and their operators comply with State motor vehicle regulations. • Trails and trailheads meet the needs of the intended recreation use. For example, trailheads to be used by horseback riders provide adequate parking and turning space for vehicles with trailers. • Trail systems meet the diverse needs of a growing population. • Conflicts between various types of trail activities are addressed and resolved. • Resource impacts due to trail location and use are identified and mitigated. • Alternate access is available where changes in land ownership or increased development have eliminated historic access to the national forest. • Use of trails and trailheads are consistent with the desired recreation opportunities identified for the trail or area.
DC-Wild and Scenic-1	• The designated wild and scenic portion of the Verde River and its adjacent areas retain their free-flowing character and outstandingly remarkable values and classifications (see map 5 in appendix A). • For the portion of the Verde River that is eligible for wild and scenic rivers designation: outstandingly remarkable values (i.e., archaeological, scenic, fishery, wildlife, recreational, and botanical) and recommended classifications remain intact until further study is conducted or designation by Congress.
DC-Wilderness-1	• The wilderness character of designated wilderness areas (see map 5 in appendix A) consists of outstanding opportunity for exploration, solitude, risk, and challenge where natural processes influence ecosystems with little or no human intervention. • The wilderness character of each recommended wilderness (see map 5 in appendix A) remains intact until further action is initiated by the Forest Service to forward recommended wilderness areas to Congress for designation. • Within designated wilderness and on related trails and trailheads, native plant communities dominate the landscape and invasive species are nonexistent or in very low abundance.

DC-Transportation and Facilities-1	• A safe, sustainable, and economical transportation system (roads and trails) exists at a level commensurate with use and need, and balances desire for public access with potential for ecological impacts. • A system of sustainable, well maintained and marked roads and trails provides diverse opportunities to safely explore the forest and does not impede wildlife and fish movement. • Transportation and trail systems and their classifications are clearly understood by forest visitors. • Recreation sites, buildings, dams, and other infrastructure operate as intended and provide a safe environment for people, while minimizing negative impacts to natural resources. • Energy efficient and economical facilities incorporate emerging technologies and are placed when and where they can be used effectively.
DC-IRA-1	• The undeveloped character of inventoried roadless areas identified in the 2001 Roadless Area Conservation Rule is retained by restricting the occurrence of road construction and timber harvest activities within their existing boundaries.

Open Space, Lands, and Scenic Values

Background for Open Space, Lands, and Scenic Values

The high rate of population growth within Yavapai County, combined with limited lands for expansion, raises awareness of land use issues involving development and land exchange. The Prescott NF provides a scenic backdrop of undeveloped and natural appearing landscapes. This contributes to a sense of open space for visitors and those who live in the communities near the forest.

Scenery management on the Prescott NF uses the Forest Service Scenery Management System, a tool for inventory and management of scenic resources. The lands program oversees permits for special uses, such as power line corridors, and responds to opportunities for acquiring or exchanging land within the Prescott NF.

Under projected warmer and drier climate conditions, open space and valued scenic elements are susceptible to changes in landscape vegetation patterns. These alterations in vegetation could result from variations in the frequency, intensity, timing, or spatial extent of wildfires or from other disturbances such as insect and disease outbreaks, drought induced vegetation die-off, or extreme weather events (e.g., flash flooding, landslides, windstorms, and ice storms).

Desired Conditions for Open Space, Lands, and Scenic Values

DC-Open Space-1	• Open space values including those related to naturally appearing landscapes, wildlife habitat, recreation opportunity, riparian/wetland character, and community needs are retained.

DC-Open Space-2	• The natural appearing visual character, free-flowing water, and habitat for federally listed and sensitive species along and within the Verde River are retained or enhanced.
DC-Lands-1	• Rights-of-way are in place for legal access needs for private land, public access, administrative access needs, or to resolve legal status deficiencies[10] at a level that is commensurate with need. Roads that provide access to multiple properties are well maintained. • Electronic sites help fulfill public and government need for adequate communication. Sites are co-located where possible to minimize visual, wildlife, recreation and other natural resource impacts. • Towers are nonreflective, self-supporting, and less than 199 feet in height to reduce visual impacts. They do not interfere with fire detection or cause radio frequency interference with senior uses[11], and they are not a source of unacceptable human exposure to radio frequency radiation[12]. • Power lines and pipelines are located and co-located within existing energy corridors when compatible. Distribution lines (less than 69 kV) are generally underground and rights-of-way for all aboveground lines have low growing plant communities that do not interfere with overhead lines growing within the corridors. • Existing recreation residences[13] are stable in number and blend into a natural forest setting.
DC-Scenic-1	• The landscape generally appears natural within the context of native vegetation and landforms. • Landscapes on a majority of the Prescott NF appear intact and unaltered by human activity. • Evidence of prescribed fire, such as black char on the bases of trees, or evidence of thinning activities, such as slash piles, may be visible but are only present for a relatively short duration.

[10] An example is gaining a right-of-way to cross private land on a road or trail that previously was located on public land.

[11] Senior communication uses predate later communication applications. The most senior use forms the basis for the communications site designation.

[12] High-powered radio broadcast towers must have radio frequency radiation studies by the Federal Communications Commission or licensed contractor to determine need for mitigation such as fencing and hazard signage around the tower to prevent public exposure.

[13] The recreation residence program began in 1915 after the passage of the Occupancy Permits Act (P.L. 63-293) that allowed summer homes to be constructed in certain parts of Forest Service lands with multiyear occupancy permits. The Forest Service retains ownership of the underlying land.

Minerals

Background for Minerals

The Prescott NF is generally a mineral rich region as demonstrated by the large number of existing and historic mineral patents. The mix of patented (mining claims) lands and NFS lands creates a patchwork of private and Federal ownership within the boundaries of the Prescott NF. While mining gold and copper were important historically, current mining activities on the Prescott NF include five mineral material contracts for removal of flagstone, one contract for schist removal, and one contract for removal of decomposed granite. One large, locatable limestone operation exists. Today, there is interest in both commercial gold mining and recreational gold panning/sluicing on the forest. Placer gold operations involve extracting gold from alluvial deposits such as panning or using a sluicebox. Lode operations, also known as hard rock mining, consist of mining a vein bearing gold or a rock in-place valuable mineral deposit. Most placer mining is recreation use or small commercial operators.

Desired Conditions for Minerals

DC-Minerals-1	• Mineral exploration and development has few impacts on natural and cultural resources. • Past and present mine facilities are sufficiently reclaimed to provide for public safety and minimize impacts to cultural and natural resources. • Developed recreation areas, such as Lynx Lake Recreation Area, and administrative sites are free from commercial mining activity. • Mineral material development balances Forest Service, community, and private needs with potential resource impacts.

Heritage Values

Background for Heritage Values

The Prescott NF heritage program manages a multitude of prehistoric and historic properties. The focus of this effort includes five primary aspects: protection, preservation, stabilization, interpretation, and research. Direction for the management of heritage resources is guided by existing law, regulation, and policy in addition to consultation with tribes that are affiliated with the Prescott NF. Archaeological inventories and tribal consultation are typically completed before ground-disturbing activities occur. If sites or areas are discovered during inventories or project actions, they are evaluated according to National Register criteria, followed by consultation with the State Historic Preservation Officer concerning how these properties might be affected by proposed management activities. Tribes that are affiliated with the Prescott NF are also brought into the consultative process, particularly if sites or areas are involved that might be sacred to them. Compliance with Section 106 of the National Historic Preservation Act of 1966 (P.L. 89-665) and other relevant law, regulation, and policy is not repeated in this plan.

Desired Conditions for Heritage

DC-Heritage-1	• Historic and prehistoric sites, including known American Indian sacred places and traditional cultural properties, are preserved and protected for their cultural importance and are free from adverse impacts. • Opportunities for interpretation, research, stewardship, and enjoyment of the cultural past are available. • Site integrity is protected and maintained for sites which are listed or eligible for listing on the National Register of Historic Places, as well as sites whose status is undetermined.
DC-Heritage-2	• Use of forest products by affiliated American Indian nations, tribes, and communities is available for traditional practices.